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Final Cultural Resources Report For The Salt Creek Midstream, LLC Proposed Waha II Pipeline Project On State Of Texas Lands In Reeves County, Texas

Michael M. Margolis

Gary D. Edington

Jerry L. Riggs

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Final Cultural Resources Report For The Salt Creek Midstream, LLC Proposed Waha II Pipeline Project On State Of Texas Lands In Reeves County, Texas

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**FINAL CULTURAL RESOURCES REPORT FOR THE
SALT CREEK MIDSTREAM, LLC PROPOSED
WAHA II PIPELINE PROJECT ON STATE OF TEXAS LANDS
IN REEVES COUNTY, TEXAS**

Texas Antiquities Permit No. 9017



Authors:

Michael M. Margolis
Gary D. Edington
Jerry L. Riggs

Archeological Principal Investigator:

Gary D. Edington

October 15, 2019

Prepared by:

Enercon Services, Inc. (ENERCON)
1601 NW Expressway
Suite 1000
Oklahoma City, OK 73118

Prepared for:

Salt Creek Midstream, LLC
20329 State Highway 249
Suite 450
Houston, TX 77070



ENERCON Project Number: SCM~00017
Cultural Resources Report Number: 18-80

ABSTRACT

Enercon Services, Inc. (ENERCON), in support of Salt Creek Midstream, LLC, conducted an intensive archeological survey for the proposed Waha II Pipeline Project. The proposed pipeline is approximately 27.33 miles in length, located near Pecos, Texas in Reeves County. This report encompasses only the two State of Texas Lands, administered by the Texas General Land Office (TGLO), segments of the proposed Waha II Pipeline Project which is approximately 0.69-miles (3,666 feet) in length in Reeves County. The State of Texas Lands portion of the project area is mapped on the United States Geological Survey (USGS) Toyah Lake, Tex. (1963), and Old X Ranch, Tex. (1963, Photorevised 1981), 7.5 Minute Quadrangles. The construction corridor consists of a 50-foot-wide permanent pipeline right-of-way (ROW) and a 50-foot-wide temporary workspace corridor. The cultural resources survey corridor was 100 feet wide for the entire 0.69-mile length of the pipeline segment through the State of Texas Lands. The total area inspected during the cultural resources survey of the State of Texas Lands was 8.43 acres (3.41 hectares).

The survey of the State of Texas property was completed under Texas Antiquities Permit No. 9017. The cultural resources field investigation on State of Texas Lands occurred on August 2 and 3, 2018 by J. Matthew Oliver and Gary D. Edington and consisted of an intensive pedestrian survey utilizing transects not spaced greater than 15 meters apart with shovel tests. The field investigation was conducted in accordance with the Texas Historical Commission (THC) Archeological Survey Standards for Texas. The entire project was supervised by Gary D. Edington, an ENERCON archeologist who meets the U.S. Secretary of the Interior's Professional Qualification Standards for archeology as set forth in 36 CFR 61.

The cultural resources survey resulted in the observation of two isolated finds (IF). IF#8 is a single lithic flake of brown chert observed on the surface in the east tract of State of Texas Lands. IF#9 is a small bulldozer push-pile of old wooden fence posts and barbed wire observed adjacent to the east fence line of the east tract of Texas State lands. IF#8 and IF#9 lack information potential and are not eligible for the National Register of Historic Places (NRHP) or State Antiquities Landmarks (SAL).

The cultural resources survey did not result in finding any additional historic or prehistoric artifacts, features, cultural lenses, or sites over 50 years of age on State of Texas Lands. No archeological sites were encountered, and no artifacts were collected. Therefore, it is recommended that the project will have no effect on any cultural resources that may qualify for inclusion to the NRHP on State of Texas Lands. No further cultural resources investigations are recommended prior to construction of the proposed Waha II Pipeline project on State of Texas Lands. If cultural material, including sites, features, or artifacts that are 50 years old or older are encountered within the ROW during construction of this project, work in the area must cease and the regional THC Archeologist must be immediately be notified.

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INTRODUCTION

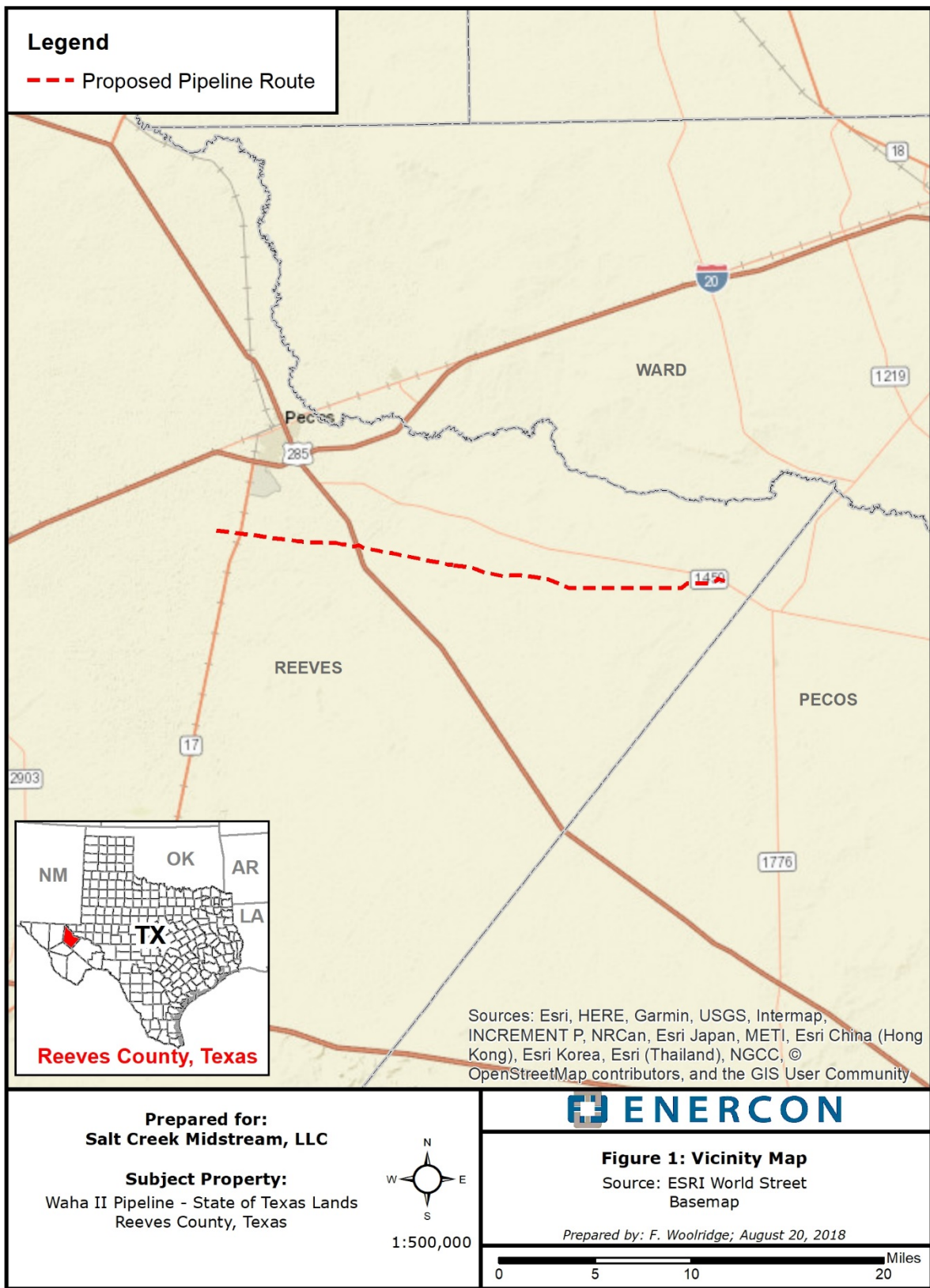
Enercon Services, Inc. (ENERCON), in support of Salt Creek Midstream, LLC, conducted an intensive archeological survey for the proposed Waha II Pipeline Project. The proposed pipeline is approximately 27.33 miles in length, located near Pecos, Texas in Reeves County (Figure 1). This report encompasses only the two tracts of State of Texas Lands, administered by the Texas General Land Office (TGLO), segment of the proposed Waha II Pipeline Project which is approximately 0.69-miles (3,666 feet) in length (Figures 2.1-2.2). The State of Texas Lands portion of the project area is mapped on the United States Geological Survey (USGS) Toyah Lake, Tex. (1963) and Old X Ranch, Tex. (1963, Photorevised 1981), 7.5 Minute Quadrangles (USGS 1963a, 1963b). The construction corridor consists of a 50-foot-wide permanent pipeline right-of-way and a 50-foot-wide temporary workspace corridor. The cultural resources survey corridor was 100 feet wide for the entire 0.69-mile length of the pipeline segment through the State of Texas Lands. The total area inspected during the cultural resources survey was 8.42 acres (3.41 hectares).

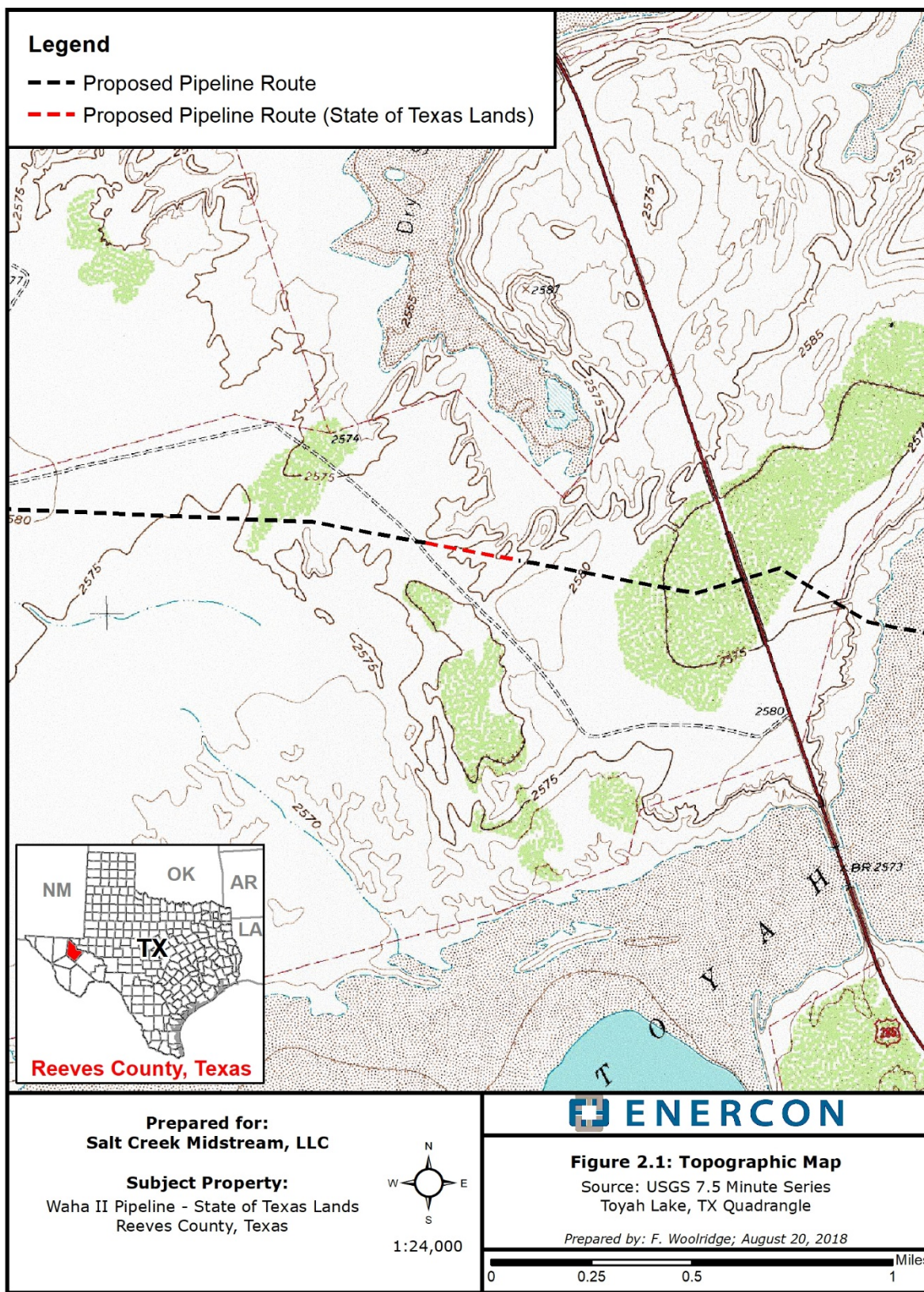
The proposed project will involve installation of a 24-inch natural gas pipeline. The proposed project area on State of Texas Lands is primarily comprised of desert scrub, desert scrub grassland in the uplands above ephemeral dry lake beds. (Figures 2.1-2.2). Most of the construction will involve temporary vegetation clearing along the ROW. The proposed 24-inch steel pipeline will be installed in an open cut trench. The average depth of the trench would be a minimum eight feet, to allow a cover of six feet above the top of the 24-inch diameter pipeline. After construction the ROW is planned to be restored to pre-construction contours and vegetation. Oil and gas development activity is prevalent along most of the ROW and portions of the ROW will cross previously disturbed areas.

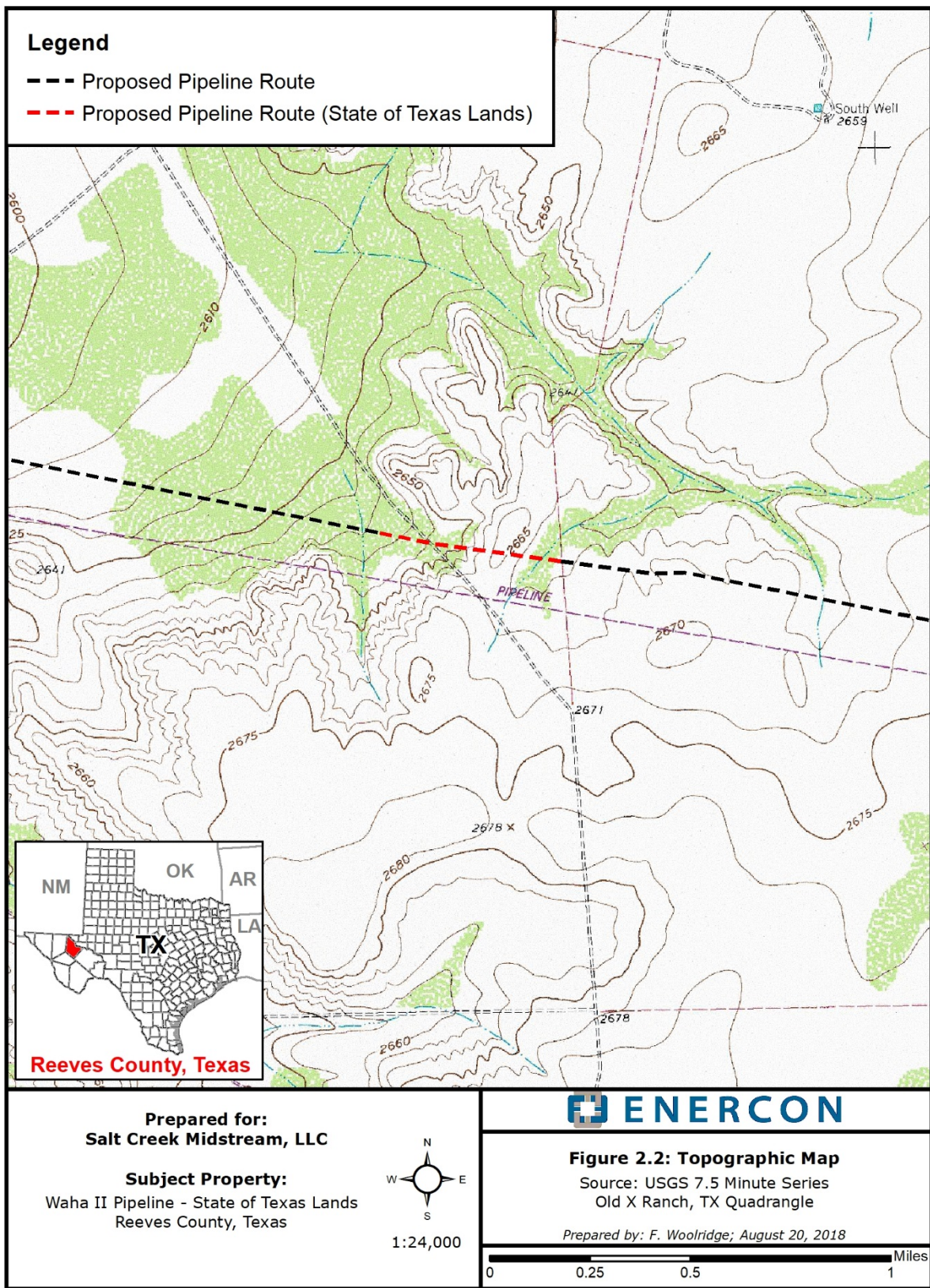
The survey of the State of Texas properties was completed under Texas Antiquities Permit No. 9017. The cultural resources intensive field investigation and report are intended to assist in adhering to the 1969 Antiquities Code of Texas. The cultural resources field investigation on State of Texas Lands occurred on August 2 and 3, 2018 by J. Matthew Oliver and Gary D. Edington and consisted of an intensive pedestrian survey utilizing transects not spaced greater than 15 meters apart with shovel tests. The field investigation was conducted in accordance with the Texas Historical Commission (THC) Archeological Survey Standards for Texas. The entire project was supervised by Gary D. Edington, an ENERCON archeologist who meets the U.S. Secretary of the Interior's Professional Qualification Standards for archeology as set forth in 36 CFR 61. Pursuant to 13 TAC 26.17, correspondence, field records, and photographs generated during field investigations have been prepared for permanent curation at the Texas Archeological Research Laboratory, Austin, Texas.

The cultural resources survey resulted in the observation of two isolated finds (IF). IF#8 is a single lithic flake of brown chert observed on the surface in the east tract of State of Texas Lands. IF#9 is a small bulldozer push-pile of old wooden fence posts and barbed wire observed adjacent to the east fence line of the east tract of Texas State Lands. IF#8 and IF#9 lack information potential and are not eligible for the National Register of Historic Places (NRHP).

The cultural resources survey did not result in finding any additional historic or prehistoric artifacts, features, cultural lenses, or sites over 50 years of age on State of Texas Lands. No archeological sites were encountered, and no artifacts were collected. Therefore, it is recommended that the project will have no effect on any cultural resources that may qualify for inclusion to the NRHP on State of Texas Lands. No further cultural resources investigations are recommended prior to construction of the proposed Waha II Pipeline project on State of Texas Lands. If cultural material, including sites, features, or artifacts that are 50 years old or older are encountered within the ROW during construction of this project, work in the area must cease and the regional THC Archeologist must be immediately be notified.







ENVIRONMENTAL BACKGROUND

The study area is situated within the Chihuahuan Basin and Playas biotic province of the Chihuahuan Deserts ecoregion (Griffith et al. 2007). The Chihuahuan Basins and Playas are part of the larger Chihuahuan Deserts which extend from the Madrean Archipelago of Arizona in the west to the Edwards Plateau of west-central Texas. The boundaries of this area are defined by an arid climate with some of the lowest precipitation rates in Texas, with annual rainfall recorded at eight to fourteen inches, which support desert shrub vegetation dominated by creosote bush on the alkaline or gypsiferous soils (Griffith et al. 2007). The elevation of the Chihuahuan Basins and Playas range from 1,200 to 4,500 feet above mean sea level (amsl) with local relief varying from 25 to 500 feet (Griffith et al. 2007:10). The major drainage of the approximately 12,625 square mile ecoregion is the Pecos River which carries runoff from New Mexico to the north (Griffith et al. 2007:8-9). Otherwise, the ecoregion is primarily internally drained, resulting in alkaline soils, but an efficient recharge rate of local aquifers.

The presence of the quality groundwater did not go unnoticed by settlers and early 20th century inhabitants who made use of the abundant ground water with irrigation wells with flow rates between several hundred to 2000 gallons per minute (Griffith et al. 2007:9). The primary crops on these irrigated agricultural fields have included cotton, pecans, alfalfa, tomatoes, onions, chili peppers, and the famous melons, particularly cantaloupe from Reeves County (Griffith et al. 2007; Geiser 2017). The ranching and irrigation based agricultural practices developed from the late 19th to 20th century in the region have altered the native environment. In the El Paso area, and to the west, aquifer drawdown has led to over a 100 foot decline in ground water levels from those recorded at the turn of the 20th century and salt build up in soils has led to the abandonment of Pecos Valley agricultural fields which were previously productive farmlands in the 1900s (Griffith et al. 2007:9). The agricultural and industrial uses of the Pecos River in New Mexico and Texas have reduced water levels in the river which was described by early observers as being 4 to 15 feet deep, and up to 100 feet wide, and as fast, deep, and wide (Griffith et al. 2007:9; Hayter 2010), into a gentle, slow, shallow, and narrow channel. As an example, the early history of settlement in the region of modern Pecos, Texas was related to the encampments of cowboys in the region due to the safe ford for cattle across the mighty Pecos River to the east of the modern town site (Smith 2010a). The historic to modern grazing practices have also altered the environment in the region. The former grasslands which previously supported cattle have been reduced by overgrazing to desert shrubs lands suitable only for sheep and goats (Griffith et al. 2007:8).

The desert setting of the study area results in relatively sparse vegetation and excellent ground surface visibility. The dominant creosote bush is an example of the resilient regional flora which can tolerate the diurnal temperature range, low moisture conditions, and high evapotranspiration rates of the region. Additional ecotones include the high saline environments of the playas where saltbush and alkali sacaton may be found along the margins of these dry salt pans and playas (Griffith et al. 2007:8). Honey mesquite, yucca, and mixed grasses are found intermittently in the region.

The study area ranges from approximately 2,665 feet to 2,573 feet (812 to 784 meters) amsl. The northwest portion of the State of Texas Lands has the lowest elevation, with the highest point occurring at the southeast area of the Texas State Lands on the undulating ridge east of the Toyah Lake basin.

According to the United States Department of Agriculture (USDA), the proposed project on State of Texas Lands crosses three mapped soil units: the Orla association, nearly level, the Delnorte-Chilicotal association, rolling, and the Reakor Association, nearly level (USDA 2018). The general soil attributes are presented in Table 1 and discussed below. The Orla association, nearly level soils are mapped on the western tract of the State of Texas Lands. These soils are typically a clay loam up to five inches in depth, underlain by gypsiferous material as shallow as 20 to 40 inches (51 to 102 cm), with a depth to bedrock of

over 80 inches (203 cm), which is considered not prime farmland. The Delnorte-Chilicotal association, rolling soils are mapped on over 90 percent of the east tract of State of Texas Lands, and are a gravelly to very gravelly loam which is not considered prime farmland, the soil association can be very shallow with petrocalcic features as shallow as seven to 30 inches (18 to 73 cm) in depth (USDS 2018). The Reakor association, nearly level soils are mapped on the extreme east portion of the east State of Texas Lands tract and are a well-drained soil with a relatively shallow depth to calcic or petrocalcic features, and an overall depth to bedrock of over 80 inches (USDA 2018). Overall, the soils in the two tracts of State of Texas Lands can be quite shallow to a calcic or petrocalcic feature (USDA 2018). These shallow soils are unlikely to contain buried cultural deposits.

Table 1. Soils within the study area by Arability, Parent Material, and Depth to Restrictive Feature

Soil Unit*	Arability	Parent Material	Depth to Petrocalcic Restrictive Feature
Orla association, nearly level	Not prime farmland	Loamy gypsiferous materials of lacustrine or alluvial origins	20–40 inches (51–102 cm)
Delnorte-Chilicotal association, rolling	Not prime farmland	Delnorte =Calcareous loamy materials containing igneous gravel Chilicotal =Loamy gravelly piedmont sediments from igneous mountains	Delnorte =7-30 inches (18-73 cm) Chilicotal =6-20 inches (15-51 cm)
Reakor association, nearly level	Not prime farmland	Loamy alluvium derived from mixed sources	20–40 inches (51–102 cm)

*Data compiled from USDA (2018)

Reeves County has a subtropical semi-desert climate with relatively short mild winters and long hot summers. The average daily temperature is 46 Fahrenheit (°F) in the winter and 83°F in the summer. Annual rainfall averages about 12 inches (29.5 centimeters [cm]) and it is distributed evenly throughout the year, with a long growing season for crops from April through September. The average humidity ranges from 40 to 70 percent due to a general paucity of thunderstorms and heavy rainfall and the fact that on average, only one-third of winters have any measurable snowfall (Jaco 1980).

ARCHEOLOGICAL BACKGROUND

Based on the archeological record, people have inhabited Texas for at least the last 12,000 years. The prehistory of the Southern High Plains has been commonly broken into five temporal periods. The dates assigned to those periods differ between authors but generally include the Paleoindian Period (ca. 11,500-8,500 B.P.), Archaic Period (ca. 8,500-1500 B.P.), Late Prehistoric Period (ca. 1,500 B.P. to 500 B.P.), Protohistoric Period (ca. A.D. 1450-1650), and Historic Period (ca. 1650-1950) (adapted from Boyd 2004).

A summary of the culture history of the region is summarized below. For additional information on the cultural history of the region and a more detailed review than is possible here, the reader is directed to the works by Patterson (1995), Ensor and Carlson (1991), Perttula (2004), and Turner, Hester, and McReynolds (2011).

Paleoindian Period

Evidence for prehistoric occupation of the area is relatively scarce in the Paleoindian Period (ca. 11,500-8,500 B.P.). It is highly likely that earlier sites have been lost to erosion due to the geological context of the

area (Boyd 1997:7). Paleoindian sites are more common on the eastern Edwards Plateau, although sites and isolated artifacts have been recorded. Although there is growing evidence for human presence in the Americas, Clovis is the first well-defined cultural horizon in the region. The remains of large herbivores are found in association with Clovis artifacts but there is a growing body of evidence for the procurement of smaller animals and plants during this time. The Clovis projectile points are lanceolate in shape and have fluted bases. Subsequent Paleoindian projectile points include Folsom and Plainview (Turner, Hester, and McReynolds 2011:45). These projectile points were typically hafted to spears, which were often thrown with the aid of atlatls.

Archaic Period

With the extinction of megafauna, the Archaic Period (ca. 8,500-1,500 B.P.) is generally defined by broader subsistence practices and an increase in intensity of resource exploitation. The climate transitioned from relatively wet in the Early Archaic Period to relatively dry in the Late Archaic Period. Additionally, temperatures appear to have increased which resulted in changes to the biotic community. Fire cracked rock and oxidized rock is relatively common during this period and likely results from hearths and ovens (Collins 2004). Although resource exploitation is inferred to be more intense, subsistence appears to be focused on seasonal mobility tied in part to bison hunting (Boyd 1997). Campsites and rock shelters have been identified from this period, mostly from the Late Archaic. Projectile points are normally barbed spear or dart points, and plant-processing tools increase through time (Johnson and Holliday 2004).

Late Prehistoric Period

The Late Prehistoric or Ceramic Period (ca. 1,500 B.P. to 500 B.P.) is marked by the presence of ceramics and smaller projectile points indicating the switch from atlatl and spear to the bow and arrow (Johnson and Holliday 2004). Due to further drying of the climate, bison appear to become scarcer in this region. Trading is inferred to have occurred with Southwestern groups including the Jornada Mogollon (Boyd 1997). Brownware pottery was imported from the Pueblos and habitation structures from this period include pit houses. Campsites were still likely used during parts of the year and would be representative of seasonal mobility. Subsistence practices included the introduction of corn. In the latter part of the period, prestige goods like Olivella shell beads, turquoise, non-local pottery, and obsidian become more common.

Protohistoric Period

The Protohistoric Period (ca. A.D. 1500-1700) begins with direct and indirect European influences in the region. The end of the period coincides with an increase in European presence and their effects on traditional lifestyles. Limited access to Europeans goods occurs, but there is relatively minimal change from the Late Prehistoric. Trade goods include bells, spikes, glass beads, and nails. European settlement did not seriously begin to disrupt aboriginal habitation until after AD 1700 (Patterson 1995:249). European diseases, probably introduced by explorers and early traders, did begin to have impacts as early as AD 1528. At least seven epidemics were recorded among the tribes of the study area between that date and AD 1890 (Ewers 1974). The Tonkawa appear to have been joined by the Ervpiame from northern Mexico (Hester 1980). Subsequent immigration by the Lipan Apache, Kiowa, and Comanche appear to change control of the area.

Historic Period (A.D. 1700 to 1950)

Spanish explorers began expeditions in the Gulf of Mexico beginning in the early 1500s followed by Catholic missionaries accompanied by Spanish soldiers. The Spanish, while teaching locals Christianity and farming, attempted to make loyal Spanish citizens. The first missions were established in Mexico, but were later built in California, Arizona, New Mexico, and Texas (Campbell 2003:36-38). The French, partially to stem the advance of the Spanish, wanted to increase their fur trading territory and gain control

of the Mississippi River valley. By 1682, LaSalle, a Frenchman, launched an expedition down the Mississippi River that claimed all of the lands drained by the river for France followed by a colonization effort to settle the mouth of the Mississippi River. Subsequent to the French incursion into the region, the Spanish increased the rate of establishing settlements in Texas (Campbell 2003:41-45, 48).

The Spanish mission system did not expand during the eighteenth century. Native American attacks and a lack of colonists contributed to the decline of Spanish settlement in Texas. In 1762, the Spanish acquired Louisiana from the French, which slowed the need to settle east Texas. In 1800, Spain ceded Louisiana to France, who then sold it to the United States. From 1800 to the 1820s, the population of Texas decreased as a result of the effects of the Mexican Revolution. In 1821, Mexico finally became an independent nation, separate from Spain. This newly independent country encouraged Anglo-American settlement within Texas; this effort was led by Stephen F. Austin. Austin came to an agreement with the Mexican government in which he would bring settlers to Texas and, in return, he would be rewarded with land and money. By 1830, ten thousand Anglo-Americans, mostly from the American southeast, had settled in Texas (Campbell 2003:105-110).

Texas operated as an independent nation for 10 years (1836 to 1846) and during this time, the Mexican government never truly recognized its independence. In 1846, Texas was annexed by the United States and it was now up to the U.S. government to settle the border dispute with Mexico. The Mexicans claimed the international border as the Nueces River, while the U.S. claimed the Rio Grande River as the demarcation line. After two years of skirmishes and an attack on Mexico City, the United States succeeded in its efforts; with the treaty of Guadalupe Hidalgo, Mexico recognized the Rio Grande as the border and ceded the entire southwest to the Pacific Ocean to the U.S. (McComb 1989:57).

At the time of annexation by the United States, west Texas was relatively unexplored territory, home to various Native American groups. Settlers began slowly pushing into this territory in the mid-nineteenth century. In 1848, the U.S. Army stationed troops in west Texas and created travel routes through this new territory, which would become corridors for pioneers traveling to California. These included the Chihuahua Trail, which led from Mexico to Indianola, Texas, and Horsehead Crossing and Castle Gap in Crane County, all of which were utilized as trade networks during the prehistoric period as well as forming part of a historic transportation corridor linking Mexico, the U.S. and Canada. Castle Gap functioned as a primary route for the U.S. Cavalry, California Forty-niners, cattle drives, and stage coach/wagon trains.

During the Civil War, Texas was a large contributor to the Confederacy, but differed significantly from other southern states. Texas was a frontier state, with a diversified population of Mexicans, Anglo-Americans, and Native Americans. The state also had a large European immigrant population, many of whom were small farmers. Two-thirds of the farmers in the state were non-slave holding, which meant that the agricultural economy was maintained following the Civil War. In addition, cattle ranches were a large industry, resulting in economic diversity. Thus, Texas was not as negatively impacted economically as other southern states during post-Civil War Reconstruction (Campbell 2003:209, 213).

The Native American groups of Texas saw the defeat of the Confederacy and the weakening of Texas as a chance to regain lands they had lost. During this period, the Comanche and Apache occupied the areas of west Texas, and restricted non-Native settlement and expansion in the region through raiding. In response to this increase of Native American raiding, the United States sent troops to reoccupy several forts. By 1874, a major campaign was initiated in Texas that took away Native Americans' horses, destroyed their villages, and forced them to return to their reservations. The consolidation of Native Americans on reservations allowed for Anglo-Americans to settle permanently in west Texas (Campbell 2003:291, 295).

Following these campaigns, the military sent troops to conduct detailed expeditions of the former Native American lands. By 1876, several of the counties northeast of the project area were surveyed by parties

from Fort Concho. Ranchers moved into these areas and began raising large herds of cattle, as the demand for beef had risen after the Civil War. New cattle trails developed throughout west Texas, where large herds were driven hundreds of miles north to the mid-western railroad routes. In 1881, the Texas and Pacific Railway extended their rail lines through west Texas; up to this point, rail transportation was only available in east Texas. Between the 1870s and 1890s, 8,000 miles of railway track were laid, connecting the entire state. The new railroads significantly reduced the time and distance it took the cattle industry to transport their herds to market (Campbell 2003:297, 306).

The expansion of the railroad connected the rural communities of west Texas with the booming cities to the east. Towards the end of the nineteenth century, cattle ranchers began to fence off their herds and create small communities on the frontier. In 1895, a law was passed that broke up these larger ranches, allowing farmers to purchase smaller tracts of land. This led to the end of open-range ranching and attracted additional settlers. West Texas communities grew slowly due to poor soil conditions and the difficulty of accessing water. People began to farm corn and cotton on the newly settled land, but ranching was still the dominant economic activity of west Texas at the end of the nineteenth century.

Reeves County is located in the Trans-Pecos region of Texas on the southwest side of the Pecos River. It is bordered by Loving and Ward Counties to the northeast across the Pecos River, Pecos County to the southeast, Jeff Davis County to the southwest, and Culberson County to the west. Reeves County totals 2,538 square miles of primarily flat to undulating lands, with mountainous areas found in the southern point of the county (Smith 2010b). The Texas and Pacific Railway was constructed through the area in 1881 with railway section houses at Pecos and Toyah, and in 1883 Reeves County was separated from Pecos County to the southwest, and Pecos was designated the county seat in 1884 during the formal organization of the county (Smith 2010b). By 1885, the community of Pecos reported 150 residents and the community of Toyah reported 75 residents, and by 1890, Reeves County had a population of 1,290 persons (Smith 2010b). The census of 1900 counted 1,847 residents in the county, with 63 farms being reported totaling 900,000 acres of farmland and 51,000 head of cattle (Smith 2010b). Intermittent droughts affected the region and the acres of farmland and size of the cattle herds in the county fluctuated over the next 20 years, but the population had increased to 4,457 residents (Smith 2010b). The discoveries of oil in the county in the 1920s contributed to the economy, but the large boom experienced in the Hendrick Field to the east did not extend into Reeves County, and it was not until the 1930's that oil fields in Reeves County brought significant economic and population growth, and by 1940 the population had increased to 8,006 residents (Smith 2010b). The 1950s discoveries of the of the Toyah Gas Field and the Geraldine-Ford field were significant in the county, but again did not compare to the "giant fields" discovered elsewhere in the region Smith (2010b). Nevertheless, the population of the county enumerated in 1960 was 17,644 and has declined since to 16,526 residents in 1970, and 15,801 residents in 1980. The decline in population is at odds with the increased economic activity in the region as the area experienced a significant oil and gas drilling boom in the 1970's and early 1980s (Smith 2010b). The 1990 census counted 15,852 residents, and in 2010, 13,783 residents were counted, and the current July 1, 2017 estimated population is at 15,281 residents (Smith 2010b; United States Census Bureau [USCB] 2018a). Since inception in 1883, the economy has been based on agriculture and mineral extraction, with oil and gas development being the primary economic activity over the last nine decades, while crops have included cotton, hay, wheat, barley and fruits and vegetables such as onions, peppers, pecans and peaches, and cantaloupes (Smith 2010b, Jaco 1980).

Pecos, Texas has had a colorful history since the nineteenth century beginning of the town on the east side of the Pecos River as a cattle camp. Later, the Texas and Pacific Railway constructed Pecos Station in 1891 on land George A Knight offered the railroad, and the community of Pecos Station evolved, later to be called Pecos City and finally, Pecos (Smith 2010a). In the 1890's Pecos was known for some famous gunfights which took place there (Smith 2010a). Nevertheless, growth and opportunity developed in Pecos, in the 1890s. In 1900 the three-room school at Pecos, which opened in 1883, had 111 students and three teachers, which caused expansion to two schools, with 148 students and four teachers for the subsequent

1900-1901 term (Smith 2010a). In 1885, the population of Pecos was 150 residents, which grew to 4,000 by 1929 when the residents voted to incorporate their town (Smith 2010a). By 1940, Pecos had 4,800 residents, and the construction of the Pecos Army Airfield during World War II increased the population to 6,500 in 1943, with continued growth indicated with 8,054 residents noted in 1952, until the population peaked in 1970 with 14,200 residents (Smith 2010a). In 1990, the population was 12,069 and in 2000, 9,501 residents were enumerated, with a decline to 8,780 residents listed in the 2010 census, and a current estimate of 9,922 residents for July 1, 2017 (Smith 2010b; USCB 2018b).

BACKGROUND RESEARCH

Prior to field investigations, an address-restricted records search was conducted online at the Texas Archeological Sites Atlas (the Atlas) to locate previously recorded archeological sites, archeological surveys, NRHP properties, and State Antiquities Landmarks (SALs). This research was conducted to determine if any known resources could be affected, as well as the types of resources in the area, and the probability of encountering the resources during fieldwork. A site file check was conducted by Michael Margolis, an ENERCON archeologist who meets the U.S. Secretary of the Interior's Professional Qualification Standards for archeology as set forth in 36 CFR 61, which resulted in the determination that no previously recorded sites were within the proposed APE on State of Texas Lands. Based on the Atlas, five archeological resources, sites 41RV6, 41RV81, 41RV27, 41RV109, and 41RV110 have been recorded within one mile of the APE of the entire proposed Waha II Pipeline Project APE. The previously recorded site attributes are presented from west to east in Table 2 and discussed below.

Table 2. Previously Recorded Sites within One Mile of the APE of the Overall Project

Site	Cultural Period	General Site Description	Distance to Project APE	Recommendation
41RV6	Late Prehistoric	Points, bifaces, stone beads	380 feet (117 m)	Not assessed
41RV81	Unassigned Prehistoric	Surficial lithic flake scatter	955 feet (291 m)	No further work recommended
41RV27	Potential Paleo to Archaic	Thermal feature, large notched biface tool	4,962 feet (1,512 m)	No further work recommended/ recommended not eligible for SAL/NRHP
41RV109	Unassigned Prehistoric	Thermal feature, a scraper, and a unimarginal tool	1,190 feet (363 m)	No further work recommended/ recommended not eligible for SAL/NRHP
41RV110	Unassigned Prehistoric	Eight features, (one noted as a potential pit house) ~20 cores, ~50 nondiagnostic tools	1,825 feet (557 m)	Not recommended for further work within recording project ROW /undetermined overall

Site 41RV6 is a three to four acre site recorded in 1979 based on the surface collections of a local informant. Materials reported in the private artifact collection included “dart points, Toyah, Scallorn arrow points bifaces, stone beads” the site is noted to be primarily a surface collection. The cultural affiliation of the site is listed as a “Late Prehistoric site, possibly affiliated with Jumno (sic)” (Jumano). Little additional information is known about the site, and it is not clear if subsurface testing has ever occurred at the site, or

if the site has been assessed for the NRHP or SAL listings. According to the Atlas, site 41RV6 is plotted over 380 feet (117 m) from the APE and will not be impacted by the proposed project.

Site 41RV81 is a 70 by 70 m lithic scatter of unknown cultural affiliation recorded in 2015 by Turpin and Sons. Observed cultural materials were listed as 10 scattered chert flakes with no observed thermal features. The site is listed as a surface manifestation with no soil depth. Previous disturbances included a pipeline and a well pad, and it was estimated that the site was only 10 percent intact. No further work was recommended at the site, and it was noted that the site had very low research potential. Site 41RV81 is plotted over 955 feet (291 m) from the APE and will not be impacted by the proposed project.

Site 41RV27 is a small (13 by 4 m) site recorded in 2000 by Anthony E Brown; John A. Peterson Associates, consisting of a two-meter diameter burned caliche feature, an associated “large” flaked tool, and a few pebbles of burned caliche outside the feature. Trowel testing of the thermal feature to 15cm failed to reveal any subsurface materials. No diagnostic materials are listed, but the “large notched tool” lead the speculation that the site represents a single component Paleoindian to Archaic cultural affiliation for the small site. The site was not recommended for further archeological work and was recommended as not eligible for the SAL or NRHP. Site 41RV27 is over 4,962 feet (1,512 m) from the APE and will not be impacted by the proposed project.

Site 41RV109 is a small 76 m² site recorded in 2017 by Versar Inc, consisting of a concentration of fire cracked rock (FCR) and burned caliche (BC) with an associated end scraper and unimarginal tool. The feature of FCR/BC was localized in a 2 by 2 m area containing 49 pieces of FCR and BC. The site form notes that no additional cultural materials were present, and that six shovel tests excavated in the vicinity of site 41RV109 were all negative for subsurface deposits. No further archeological work was recommended at the site, and it was recommended that site 41RV109 was not eligible for the NRHP or SAL listings. Site 41RV109 is over 1,190 feet (363 m) from the APE and will not be impacted by the proposed project.

Site 41RV110 is an 11,917 m² site recorded in 2017 by Versar Inc, consisting of eight prehistoric features including three FCR/BC concentrations and five charcoal stains. One stain is postulated to be a potential pit house. Observed artifacts are listed as “hundreds of artifacts including flakes, ~20 cores, ~50 unifacial and unimarginal tools of grey, white and black chert, purple quartzite”. Whole and partial manos of quartzite and sandstone are listed, as well as shell fragments, and 700+ scattered FCR and BC. The site is noted to be disturbed/truncated by an existing pipeline and County Road 1450. The site is estimated to be 75 to 85 percent intact. An unstated number of shovel tests were placed at the site, with “one flake and charcoal are noted in an STP”. The top of the deposits below surface is list as 12, and the depth of deposits is listed as 22. No further work was recommended at site 41RV110 as the intact materials were noted to be outside of the study area of the project. Similarly, the site was recommended as not eligible for SAL or other listings. Site 41RV110 is over 1,825 feet (557 m) from the APE and will not be impacted by the proposed project.

Based on the Atlas, there are two mapped projects within a mile of the study area. The previous archeological studies within one mile of the project include THC Atlas Numbers 8500058345, and 8400004696. These studies, and the overall background research of the region suggests that the study area is located within a larger area where climatic conditions, burrowing rodents, and the effects of ranching and oil and gas exploration have each effected the cultural landscape, leading to two types of general settings. Wind erosion and extensive bioturbation from rodent burrowing, and sheep and cattle grazing have exposed the upper surface of the landscape within the Chihuahuan Basins and Playas. With the exception of a few geomorphological locations, archeological sites of all ages may be located on the exposed ground surface and/or were never buried (Hall 2006:2-7). The majority of archeological sites are located on eroded surfaces and therefore lack vertical integrity and stratigraphy (Hall 2006:2-15). Intact archeological deposits may be encountered where there are depositional processes, such as (a) colluvial; (b) eolian sand deposits associated

with the playa margins; (c) upland playa and lake fill deposits; and (d) within and adjacent to extant and/or extinct draws and/or drainages of Late-Pleistocene to early Holocene age (Hall 2006:2-7, 2-11; Johnson and Holliday 2004:285, 290, 294). Within the State of Texas Lands segment of the proposed Waha II Pipeline project the former setting is predominant, and many sites would be expected to be resting on the surface.

METHODOLOGY

The cultural resources field investigation followed the THC's *Archeological Survey Standards for Texas*. The project area was surveyed by using parallel pedestrian transects spaced no more than 15 m apart. The entire 100 foot (30 m) wide survey corridor within the proposed project area on University Lands was subjected to pedestrian survey for cultural resources.

Shovel testing density within the survey followed minimum standards outlined by the THC and the Council of Texas Archeologists' practices and procedures, which call for 16 shovel tests per mile in settings which have the potential for buried deposits. Shovel testing was not required in areas where ground surface visibility (GSV) was greater than 30 percent, or areas with slopes greater than 20 percent, or which did not exhibit potential for buried deposits. Shovel test pits are not excavated in areas with standing water, or in areas in which underground utilities are present.

Shovel tests generally measure 30 cm in diameter and are excavated by hand digging to bedrock, a stratigraphic deposit (e.g. subsoil) that was determined to be below Holocene aged deposits, or to 80-100 cm (dependent on soil matrix consistency and hardness). All shovel test pit fill was passed through ¼ inch mesh screen or gone through by hand if the soil would not pass through the screen. Shovel test pits were excavated in arbitrary 10 cm levels unless stratigraphic changes were observed.

The cultural resources field investigation of the 100 foot (30 m) wide survey corridor exceeded the minimum standards outlined by the THC and the Council of Texas Archeologists' practices and procedures (13 TAC 26.5 and 26.20).

RESULTS

The cultural resources field investigation of the Waha II Pipeline Project State of Texas Lands study area occurred August 2 and 3, 2018 by ENERCON archeologists J. Matthew Oliver and Gary Edington. The entire project was supervised by Gary D. Edington, an ENERCON archeologist who meets the U.S. Secretary of the Interior's Professional Qualification Standards for archeology as set forth in 36 CFR 61. The cultural resources survey corridor was 100 foot wide for the entire 0.69-mile (3,666 feet) length of the pipeline segment through the State of Texas Lands (Appendix A). The total area inspected during the cultural resources survey was 8.42 acres (3.41 hectares).

During the fieldwork, the weather was seasonal, with low temperatures in the lower 70s°F and daily high temperatures ranged from 95°F to the low 100s°F with partly cloudy to cloudy skies and relatively low winds. The vegetation within the study areas was typically desert scrub-shrub with creosote bush, mesquite, intermittent thin mixed grasses, occasional narrow leaf yucca, and a variety of forbs. The west tract of State of Texas Lands is located in the undulating uplands west of US Highway 285, south of Dry Salt Lake and west of the Lake Toyah basin (Figure 2.1). The terrain was gently undulating with observable topographic variation and the vegetation was thin mixed grasses with occasional creosote bush and mesquite which

provided good to excellent GSV averaging over 90 percent (Figures 3 to 6). The surface is deflated by eolian and sheet erosion with areas of exposed gypsum and calcic soils present (Figures 3 to 6). This tract has experienced minimal oil field development. Due to the deflated and limited soils present in this tract of State Lands, the probability of intact buried archeological deposits was very low. No shovel tests were placed within the west tract of State Lands.

The east tract of State of Texas Lands is located in the rolling uplands east of Barrilla Draw and Lake Toyah. The APE crosses a low ridge on the northeast portion of the tract, and a shallow drain flows to the northeast off the ridge while the rest of the tract slopes moderately to the west (Figure 2.2). Vegetation was denser, with taller mesquite, creosote bush, and a variety of forbs, but GSV remained over 80 percent (Figures 7 to 12). This tract has been subjected to extensive oilfield disturbances in the last decade (Figure 2.2) and the APE crosses two 21st century two track roads, two recent lease roads, and five pipeline ROWs (Figure 9). The recent disturbances have impacted approximately 40 percent of the ground surface of the APE. Caliche gravels were present on the surface in the desert floor setting, soil development was limited and most of the area was deflated by eolian actions and sheet erosion. The setting had a low probability of buried cultural material, and only two shovel tests were placed within the east tract of State Lands.

The cultural resources investigation of the proposed Waha II Pipeline Project on State of Texas Lands resulted in the observation of two isolated finds (IF), IF#8 and IF#9. IF#8 consists of a single flake of brown chert observed on the surface west of a small mapped drain (Figures 13 to 16). The flake exhibited some retouch flaking on the margins indicating possible use as an expedient tool. A pedestrian grid at 3-5 m intervals of the area of IF#8 failed to locate any additional cultural materials on the surface in the vicinity despite the generally good GSV of 60 to 80 percent. Two shovel tests placed in the vicinity of the artifact were negative for cultural resources (Figure 2.2, 17 to 18). The shovel tests indicated silty tan calcic soils with caliche gravels to 70 cm in depth in ST1, and to 40 cm in depth over bedrock at ST2. Due to the lack of any additional cultural materials or features at the location, the flake was noted as an IF.

IF#9 consists of a small pile of earth, fence posts, and barbed wire observed adjacent to the east fence line of the west tract (Figures 19 to 20). No additional cultural materials were present at the location of IF#9. The observed fencing materials are possibly over 50 years of age, but the small bulldozer created pile of earth and fencing appears to be the result of fence replacement activities in 2008, or lease road and gate construction in 2012, which are evident on modern aerial images from the last 10 years. Due to the unknown date of the small bulldozer created pile of earth and fencing, the feature was noted as IF#9.

The cultural resources survey of the two tracts of State of Texas Lands on the Waha II pipeline did not result in the observation of any additional cultural materials over 50 years of age within the ROW.



Figure 3. General overview of the APE facing east-southeast from the west boundary of the west tract of State of Texas Lands, showing thin grasses and calcic soils.



Figure 4. General overview of the APE GSV, facing down from the west boundary of the west tract of State of Texas Lands, showing thin grasses and calcic soils.



Figure 5. General overview of the APE, facing west from the east boundary of the west tract of State of Texas Lands, showing thin grasses, with occasional mesquite and creosote bush, and calcic soils.



Figure 6. General overview of the APE GSV, facing down from the east boundary of the west tract of State of Texas Lands, showing thin grasses and calcic soils.



Figure 7. General overview of the APE facing east-southeast from the west boundary of the east tract of State of Texas Lands, showing mesquite, sand sage and mixed weeds and forb vegetation.



Figure 8. General overview of the APE GSV, facing down from the west boundary of the east tract of State of Texas Lands, showing decaying organic materials.



Figure 9. General overview of the APE, facing east-southeast in central portion of the east tract of State of Texas Lands, showing ground disturbance from a multiple pipeline crossing and lease road.



Figure 10. General overview of the APE GSV, facing down in the central portion of the east tract of State of Texas Lands, showing gravel laden soils and small weeds and forbs.



Figure 11. General overview of the APE, facing west-northwest into the east tract of the State of Texas lands from the fence just east of the east property boundary, showing creosote, bush and broom weed.



Figure 12. General overview of the APE GSV, at the east boundary of the east tract of the State of Texas Lands.



Figure 13. Dorsal view of IF#8, a single flake of brown chert with some edge modifications.



Figure 14. Ventral view of IF#8, a single flake of brown chert with some edge modifications.



Figure 15. General overview of IF#8, a single modified flake of brown chert on the surface, facing west (the red arrow points to the flake).



Figure 16. General overview of IF#8, a single modified flake of brown chert on the surface, facing east (the red arrow points to the flake).



Figure 17. General overview of ST#1 at IF#8, facing down.



Figure 18. General overview of ST#2 at IF#8, facing down.



Figure 19. IF#9, a bulldozed pile of earth, wooden fence posts and barbed wire, facing northeast.



Figure 20. IF#9, a bulldozed pile of earth, wooden fence posts and barbed wire, facing west (the spade was placed on IF#9 for scale).

RECOMMENDATIONS

Enercon Services, Inc. (ENERCON), in support of Salt Creek Midstream, LLC, conducted an intensive archeological survey for the proposed Waha II Pipeline Project. The proposed pipeline is approximately 27.33 miles in length, located near Pecos, Texas in Reeves County. This report encompasses only the State of Texas Lands administered by the Texas General Land Office (TGLO) segment of the proposed Waha II Pipeline Project which is approximately 0.69-miles (3,666 feet) in length. The State of Texas Lands portion of the project area is mapped on the United States Geological Survey (USGS) Toyah Lake, Tex. (1963) and Old X Ranch, Tex. (1963, Photorevised 1981), 7.5 Minute Quadrangles (USGS 1963a, 1963b). The construction corridor consists of a 50-foot-wide permanent pipeline right-of-way and a 50-foot-wide temporary workspace corridor. The cultural resources survey corridor was 100 feet wide for the entire 0.69-mile length of the pipeline segment through the State of Texas Lands. The total area inspected during the cultural resources survey of the State of Texas Lands was 8.42 acres (3.41 hectares).

The survey of the State of Texas property was completed under Texas Antiquities Permit No. 9017. The cultural resources intensive field investigation and report are intended to assist in adhering to the 1969 Antiquities Code of Texas. The cultural resources field investigation on State of Texas Lands occurred on August 2 and 3, 2018 by J. Matthew Oliver and Gary D. Edington and consisted of an intensive pedestrian survey utilizing transects not spaced greater than 15 meters apart with shovel tests. The field investigation was conducted in accordance with the Texas Historical Commission (THC) Archeological Survey Standards for Texas. The entire project was supervised by Gary D. Edington, an ENERCON archeologist who meets the U.S. Secretary of the Interior's Professional Qualification Standards for archeology as set forth in 36 CFR 61. Pursuant to 13 TAC 26.17, correspondence, field records, and photographs generated during field investigations have been prepared for permanent curation at the Texas Archeological Research Laboratory, Austin, Texas.

The cultural resources survey resulted in the observation of two isolated finds (IF). IF#8 is a single lithic flake of brown chert observed on the surface in the east tract of State of Texas Lands. IF#9 is a small bulldozer push-pile of old wooden fence posts and barbed wire observed adjacent to the east fence line of the east tract of Texas State lands. IF#8 and IF#9 lack information potential and are not eligible for the National Register of Historic Places (NRHP) or State Antiquities Landmarks (SAL) listings.

The cultural resources survey did not result in finding any additional historic or prehistoric artifacts, features, cultural lenses, or sites over 50 years of age on State of Texas Lands. No archeological sites were encountered, and no artifacts were collected. Therefore, it is recommended that the project will have no effect on any cultural resources that may qualify for inclusion to the NRHP on State of Texas Lands. No further cultural resources investigations are recommended prior to construction of the proposed Waha II Pipeline project on State of Texas Lands. If cultural material, including sites, features, or artifacts that are 50 years old or older are encountered within the ROW during construction of this project, work in the area must cease and the regional THC Archeologist must be immediately be notified.

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